

ELEPHANTIASIS ARABUM

IN THE SAMOAN ISLANDS.

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ONE can scarcely realize the paucity of literature upon Elephantiasis Arabum till one has looked in vain through the vast field of medical writings for even a passable description of the disease. In some of our leading works upon the practice of medicine no mention whatever is accorded the malady, their eminent authors evidently considering it a surgical one; while, turning to surgical treatises, we find that the majority of them simply give a brief description of *lymph scrotum* and the operation for its removal. There is really little, however, about the disease that is not already known to the profession, though in no one book have I seen it fully considered.

This form of elephantiasis is chiefly found in the torrid zone, but has no longitudinal boundaries. It occasionally occurs in temperate climates, though to a much less extent than true leprosy, and may be considered as essentially a tropical disease. The Barbadoes leg of the Antilles, Cochin leg of China and India, Yava skin of Polynesia, and Féfé of Samoa are all elephantiasis Arabum, and all present essentially the same characteristics. As the theories of causation advanced thus far have been contradictory and incomplete, it was a great disappointment to me that the flying cruise I made through the Samoan group did not offer the opportunity for as careful and extended investigation into its ætiology as I could have desired.

The disease is very common in all of the South Sea Islands, and in the Samoan — from the rough statistics I could gather — about one per centum of the total number of inhabitants are affected by it. Men are more frequently attacked than women, in the ratio of five to one, the disease rarely manifesting itself in either sex before the age of sixteen years. Children are said to enjoy complete immunity from it, and I could find none affected in the towns and villages I visited. Race seems to exert a certain predisposition, the dark Polynesians and coal-black negroes from the New Hebrides being more prone to attack than the white man. Of the seventy-five whites living in the town of Apia, and fifty more scattered over the different islands of the group, not a single woman and only one man had contracted féfé. This man had a lymph scrotum, and ascribed it to careless exposure by sleeping on the ground, after the native style, while trading through the various islands of the South Pacific.

Neither Dr. Wise's theory of diseased veins, nor Mr. Day's of malarial fever, nor Mr. Dalton's of a constitutional origin for elephantiasis Arabum, seem to be borne out by a study of the disease as seen in Samoa. Dr. Carnochan's view of enlarged arterial trunks appears more nearly correct than any yet put forward, for whether the arteries of the affected parts are enlarged prior to the first inflammatory attack or not, they certainly are during the course of the disease, being at the same time greatly increased in number. The veins are also augmented, both in size and number, and as their walls are closely adherent to the gristly mass through which they run, they appear much like the sinuses of a gravid uterus, the cut ends always remaining perfectly patulous. These veins cannot be called diseased in a causative light, for they are simply enlarged in calibre and multiplied to accommodate the extra arterial flow. The occasional febrile movement which has been noticed at the beginning of the inflammatory attacks, together with the epochal character of

these onsets, may have given rise to the idea of a malarial origin for this variety of elephantiasis, but in Samoa at least, malarial influence can have no effect upon it. This group of islands is of volcanic formation, all its members are high, rocky, and precipitous, and are swept constantly by the strong southeast trade winds. Periodical fevers are unknown, and I should unhesitatingly pronounce them as thoroughly salubrious and free from miasmatic influence as any vegetative tract in the world.

The local nature of the affection in Samoa would appear to be explained by the manner in which it is probably contracted. The natives all live in low, thatched huts, the floors of which are covered with gravel to the depth of three or four inches. Upon this floor small mats are placed, and the native sits crossed-legged, smoking, three fourths of the day. At night several mats are thrown together upon the damp, gravel floor for a bed, and with a section of bamboo for a pillow and a piece of *tapa* cloth (beaten from the bark of the paper mulberry) for a covering, the Samoan makes himself snug till morning. As he wears only a *lava-lava*, or breech clout, of course when he sits, the legs, thighs, nates, and scrotum are in contact with the thin mat which covers the gravel floor, and the constant chilling and irritation of the exposed skin and subjacent tissues produced by the dampness and changeable temperature of the earth, aided no doubt by the uneven floor, cause, after a certain length of time, a slight erythematous swelling of one or more of the parts, attended by a feeling of heat and itching, and now and then a little fever. This first attack can scarcely be called inflammatory in the great majority of cases, and, as a rule, no physical change remains which is apparent to the eye; but the part or parts are undoubtedly rendered much more sensitive to exciting causes, for soon another congestion sets in, this time becoming a *bonâ fide* inflammation, which after its subsidence leaves the region uniformly enlarged, the skin feeling thick and brawny,

showing a hyperplasia of the cutis vera and subcutaneous connective tissue. These inflammatory attacks recur from time to time, each recurrence adding more plastic material, which gradually undergoes morphological changes. The parts generally affected are the extremities and scrotum in the male and lower extremities in the female. Disease of the arms and genitalia of women is only now and then encountered. As the disease progresses the skin is thrown into large folds at the flexures of the extremities, and between these folds deep fissures often form and obstinate ulcerations occur. Sometimes this hypertrophy, once fairly under way, steadily advances without apparent inflammatory epochs. The enlarged limbs seem to give no trouble aside from the mechanical obstruction of bodily movements. The enormous scroti make micturition difficult and render walking all but impossible, and it is curious to see the novel suspensory devices resorted to by the natives to get them out of the way of the thighs.

I have never seen a real case of false leprosy attacking the head, neck, or face, and when the disease is mingled with the true variety, — as, for instance, in Honolulu, — this fact, together with the absence of anæsthetic spots, is considered of great diagnostic value during the early stages of the two diseases by experienced physicians of the Sandwich Islands. I can recall several cases exhibited to the class during my student days as elephantiasis Arabum affecting the face, tongue, and fauces, in one case the larynx also being diseased and requiring the use of a tracheotomy tube to breathe, but I am satisfied now that all these cases were really elephantiasis Græcorum.

The disease progresses slowly, and only proves fatal by interfering with healthy nutrition, thus exhausting the patient's forces and rendering him liable to attacks of intercurrent diseases, especially pulmonary phthisis, which is very prevalent and very fatal in the Islands.

The only treatment which has been attempted so far in Samoa has been directed to the scrotum, the ex-

cision of which is a common operation with visiting American naval surgeons, and most popular among the natives. As soon as an American war vessel anchors in any of the Samoan ports the medical officer — *fō-mai* — is beset on all sides by the relatives of the afflicted, and ere a day has passed he has sufficient material to keep him busy for a month. In the harbor of Pago Pago I improvised a crude hospital on shore in one of the native huts, and held daily clinics. In this hospital, upon the hewn trunk of a tree but four feet long and two high, and with the assistance only of an officer friend, I removed a lymph scrotum of thirty-five pounds' weight. The man was placed upon his back on the hewn block, with his buttocks brought well to the edge, and the tumor supported upon a small box. Ether was given, and when the patient was thoroughly under its influence a stick was put between the teeth on one side, which, together with the ether cone, was held during the operation by an intelligent native. The penis was exposed by laying open the superincumbent tissue upon a director, after which it was rapidly dissected from its bed — care being taken to avoid wounding the frenum and suspensory ligament, — and reflected upon the abdomen. An incision was next made downward, outward, and backward, from the bed previously occupied by the penis, and carried to a depth of two inches through the thick, gristly tissue without revealing the tunica vaginalis. The hæmorrhage was so extensive from both arteries and veins, and the difficulty in tying the vessels, owing to the close union of their walls to the stroma of the tumor, caused such delay that it was deemed safest to tie each important vessel as cut, and continue the search for the testicle by shallow incisions of half an inch depth. Six or eight of these exploratory cuts were made before the tunica was opened, and found to contain a large gelatinous hydrocele. The testis lay at a depth of six inches from the surface, and it was not without much time and care that, with its cord, it

was detached and reflected on to the abdomen. Profiting by the experience gained in searching for the right gland, the left was much sooner reached, dissected from its attachments, and reflected. The entire hypertrophied mass was finally removed by two transverse incisions; the first half severing the mass, when the great arterial and venous hæmorrhage made it necessary to stop and catch up the bleeding vessels with forceps, and the second completely detaching the tumor from the body. The operation lasted an hour and a half, during which time the patient lost much blood, though he still had a fair pulse at the conclusion. The only knife used was a stout, straight, sharp-pointed bistoury, which was found to answer all requirements admirably. There was a little uncertainty about the soundness of the left testis, but the man was given the benefit of the doubt, and the two glands were brought together and held in apposition by oiled silk dipped in carbolized oil, the dressing completely surrounding and separating them from the wound below. Over the oiled silk several layers of lint saturated with the carbolized oil were placed, and finally over the lint a couple of thicknesses of dry cotton batting. The penis was put up separately in oiled silk and lint, and, with the testes, was supported by a T handkerchief bandage.

The patient rapidly returned to consciousness after stopping the ether, and expressed himself as quite comfortable. A good dose of morphia was given, and he was not seen again till the next day, when he was found in an excellent condition, having no fever or pain. The glands had closely adhered, and presented the appearance of a scrotum from which the skin had been removed by blistering. There was a little fever on the second and third days after the operation, but it caused no uneasiness, and the case progressed so nicely that the man was allowed to sit up on the fifth day, and when the ship left, on the seventh, granulation and cicatrization were rapidly advancing.

This man had elephantiasis of the right lower extremity also, and, had the ship remained a few weeks longer, I designed deligating the femoral artery after the manner of Carnochan, which seems to offer the only remedial hope when the disease attacks the extremities.

Out of seven scrotal excisions done in Pago Pago by our naval surgeons only one death ensued, and that was due entirely to the patient's neglect in not carrying out the surgeon's orders after the ship had sailed. The operation, though tedious, is neither difficult nor dangerous, and were it not for the excessive immediate bleeding and a certain liability to secondary hæmorrhage, would give the surgeon no anxiety.

Several specimens of lymph scrotum were examined under the microscope, and the presence of parasitic forms carefully searched for, though not, perhaps, with the acuteness of a specialist's eye. Mr. Manson, of Amoy, states that the *Filaria sanguinis hominis* plays an important part both in true and false leprosy; but not a trace of this organism could be found in the specimens examined, nor could any other form of organic life be detected. The great bulk of the new structure seemed to be made up of a stroma of very dense connective tissue, in the meshes of which were held blood-vessels, nerves (?), lymphatics, and masses of connective-tissue cells. The exudation of coagulable lymph described by Mr. Manson was noticed, but to a very limited extent.

